

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently amended): A composition comprising:

an apoprotein apophytochrome polypeptide consisting of between about 190 amino acids and about 400 amino acids, which apoprotein apophytochrome polypeptide comprises a lyase domain, wherein said apoprotein polypeptide is selected from the group consisting of a plant apoprotein apophytochrome polypeptide, an algal apoprotein apophytochrome polypeptide, and a cyanobacterial apoprotein apophytochrome polypeptide; and
a bilin.

Claim 2 (Canceled).

Claim 3 (Currently amended): The composition of claim 1, wherein the apoprotein polypeptide consists of about 390 amino acids.

Claim 4 (Currently amended): The composition of claim 1, wherein the apoprotein polypeptide consists of about 200 amino acids.

Claim 5 (Currently amended): The composition of claim 4, wherein the apoprotein polypeptide is as shown in SEQ ID NO: 9.

Claim 6 (Canceled).

Claim 7 (Currently amended): The composition of claim 1, wherein the apoprotein polypeptide is from Synechocystis.

Claim 8 (Currently amended): The composition of claim 7, wherein the apoprotein polypeptide has the amino acid sequence of SEQ ID NO:2 (Cph2).

Claim 9 (Currently amended): The composition of claim 1, wherein the apoprotein polypeptide is covalently linked to a said bilin to form a fluorescent adduct.

Claim 10 (Original): The composition of claim 9, wherein the bilin is a tetrapyrrole.

Claim 11 (Original): The composition of claim 10, wherein the bilin is phycoerythrobilin.

Claim 12 (Original): The composition of claim 9, wherein the fluorescent adduct is linked to a biomolecule.

Claim 13 (Original): The composition of claim 12, wherein the biomolecule is selected from the group consisting of a protein, a carbohydrate, a lipid, and a nucleic acid.

Claim 14 (Original): The composition of claim 13, wherein the biomolecule is a nucleic acid.

Claim 15 (Original): The composition of claim 13, wherein the biomolecule is a protein.

Claim 16 (Original): The composition of claim 15, wherein the protein is an antibody.

Claim 17 (Currently amended): A method of detecting the presence of a biomolecule in a sample, the method comprising:

providing a sample comprising a biomolecule linked to a fluorescent adduct consisting of a bilin and an apophytochrome polypeptide an apoprotein of between about 190 amino acids and about 400 amino acids, which apoprotein apophytochrome polypeptide comprises a lyase domain, wherein said apoprotein apoprotein apophytochrome polypeptide is selected from the group consisting of a plant apoprotein apophytochrome polypeptide, an algal apoprotein apophytochrome polypeptide, and a cyanobacterial apoprotein apophytochrome polypeptide;

contacting the sample with light which causes the fluorescent adduct to emit light;

detecting the emitted light, thereby detecting the presence of the biomolecule.

Claim 18 (Original): The method of claim 17, wherein the step of contacting the sample with light includes contacting the sample with light having a wavelength of about 570 nm.

Claim 19 (Original): The method of claim 17, wherein the step of detecting the emitted light includes detecting light having a wavelength of about 590 nm.

Claims 20-21 (Canceled).

Claim 22 (Currently amended): The method of claim 17, wherein the apoprotein apophytochrome polypeptide consists of about 390 amino acids.

Claim 23 (Currently amended): The method of claim 17, wherein the apoprotein apophytochrome polypeptide consists of about 200 amino acids.

Claim 24 (Currently amended): The method of claim 23, wherein the apoprotein apophytochrome polypeptide consists of the amino acid sequence of is a as shown in SEQ ID NO: 9.

Claim 25 (Currently amended): The method of claim 17, wherein the apoprotein apophytochrome polypeptide is from Synechocystis sp.

Claim 26 (Currently amended): The method of claim 25, wherein the apoprotein apophytochrome polypeptide is from Cph2.

Claim 27 (Original): The method of claim 17, wherein the bilin is a tetrapyrrole.

Claim 28 (Original): The method of claim 27, wherein the bilin is phycoerythrobilin.

Claim 29 (Original): The method of claim 17, wherein the biomolecule is selected from the group consisting of a protein, a carbohydrate, a lipid, and a nucleic acid.

Claim 30 (Original): The method of claim 29, wherein the biomolecule is a nucleic acid.

Claim 31 (Original): The method of claim 29, wherein the biomolecule is a protein.

Claim 32 (Original): The method of claim 31, wherein the protein is an antibody.